

CLAIMS

1. An optical switch, comprising an input array of optical elements spaced from an output array of optical elements, means to direct radiation beams and a further array of optical elements optically located between the inputs and outputs, wherein the pitch of the optical elements of said further array of optical elements is inferior to the pitch of the input and/or output array of optical elements.
5
2. A switch according to claim 1 wherein the array of optical elements is located where
10 optical paths cross each other.
3. A switch according to claim 1, wherein the array of optical elements is located in the gaps between where the optical paths cross each other.
- 15 4. A switch according to any of the preceding claims, wherein the further array of optical elements has the primary function of reforming the beams and is placed at a location in the space between the inputs and outputs where reforming the beams allows the achievable optical path length between the input and output arrays to be greater than the optical path length achievable without the further array of elements.
- 20 5. A switch according to claim 4 wherein the further array of optical elements is located substantially at the centre of the space between the inputs and outputs and the pitch of the elements is substantially half the pitch of the input and/or output array of optical elements.
- 25 6. A switch according to claim 4 wherein the further array of optical elements is located substantially at a third of the optical path length either from the input array of optical elements or from the output array of optical elements and the pitch of the elements is substantially a third of the pitch of the input/or output array of optical elements.
- 30 7. A switch according to claim 6 wherein a second further array of optical elements is located substantially at a third of the optical path length from the input array of optical elements provided the first further array is located a third of the optical path length from the output of optical elements.

8. A switch according to claim 4 wherein the further array of optical elements is located substantially at a quarter of the optical path length either from the input array of optical element or from the output array of optical elements and the pitch of the elements is
5 substantially a quart of the pitch of the input and/or output array of optical elements.
9. A switch according to claim 1 wherein the further array of optical elements is a reflective array.
10. A switch according to claim 1, wherein the further array of optical elements is a striped mirror.
11. A switch according to claim 1, wherein the further array of optical elements is a lenslet array.
- 15 12. A switch according to claim 1, wherein the further array of optical elements consists of a combination of at least any two of the following elements: striped mirror, lenslet and reflective element.
- 20 13. A switch according to claim 1 wherein radiation is inputted and/or outputted to/from the switch via collimators onto an array of tilting mirrors.
- 25 14. A switch according to claim 1 wherein the input array incorporates collimators adapted to be displaced in a rocking motion within a given pitch, the optical pitch of the further array of elements being substantially half the pitch of the collimators and the further array of elements being located substantially halfway between the input and output array.
- 30 15. A switch according to claim 1 wherein the input array incorporates collimators adapted to be displaced in a rocking motion within a given pitch, the optical pitch of the further array of elements being substantially one third of the collimators and the further array of elements being located substantially one third of the optical path length between the input and output array.

16. A switch according to claim 1, wherein the input array incorporates collimators adapted to be displaced in a rocking motion within a given pitch, the optical pitch of the further array of elements being substantially one fourth of the collimators and the further array of elements being located substantially one fourth of the optical path length between the input and output array.
- 5
17. An optical switch substantially as hereinbefore described and/or illustrated in any appropriate combination of the accompanying text and/or drawings.

10

15

20

25

30